REMARKS/ARGUMENTS

THE ABOVE AMENDMENTS:

The specification has been amended to provide the serial number of a U.S. patent application referenced in the specification, to update the location of Picoliter Inc, and to correct a typographical error. In addition, the specification has been amended to identify item **25** in FIG. 2 as an integrated cartridge. These minor corrections in no way introduce new matter.

Independent claims 1, 52, 56 and 58 have been amended to clarify the inventive subject matter and to expedite prosecution. Each of these claims have been reworded to set forth a device comprising a substrate having an ***integrated indicator that exhibits a detectable response to a condition, wherein the indicator continues to exhibit the detectable response for at least one minute after removing the device from the condition.*** This is supported in the specification, for example, on page 5, lines 20-22, and in claim 2 as filed.

Accordingly, no new matter has been added by way of these amendments. With the cancellation of claim 2, claim 3 has been amended to depend from claim 1 instead of claim 2 and to render its terminology consistent with that of claim 1. Claim 2 has been canceled to eliminate duplicative recitation of claim elements, in view of the amendment to independent claims 1, 52, 54, and 58. Claim 14 has been amended to correct an error in the original application pointed out by the Examiner.

These amendments are made for the sole purpose of clarification. Accordingly, the independent claims remain unaltered in scope, and the amendments do not introduce any new issues. In addition, these amendments put the claims in better shape for appeal, should an appeal be necessary. Accordingly, applicants respectfully request entry of the amendments.

In addition to an Action on the merits, Examiner set forth a Restriction Requirement and a Requirement for an Election of Species in the Office Action mailed June 29, 2004. Claims 61-82 have been canceled as a result of restriction. Cancellation of these claims is without prejudice and without intent to abandon any originally claimed subject matter.

Thus, no new matter has been introduced by way of any these amendments and entry thereof is proper and requested.

Examiner's Restriction Requirement:

Examiner set forth five inventions corresponding to the following five groups of claims and required restriction under 35 U.S.C. 121:

I. Claims 1-60, drawn to a device, classified in class 422, subclass 50;

II. Claims 61-62, drawn to an apparatus for attaching molecular moieties, classified in class 435, subclass 286.2

III. Claims 63-64, drawn to a method for attaching molecular moieties, classified in class 435, subclass 7.1;

IV. Claims 65-73,drawn to an apparatus for assaying a sample, classified in class 435, subclass 287.1; and

V. Claims 74-82, drawn to a method for assaying a sample, classified in class 436, subclass 55.

Applicants have previously made a provisional election with traverse to elect the claims of Group 1.

Examiner's Election of Species

The Examiner has also required election of one each from the following three species:

1. Substrates - disk (claim 45), tape (claim 46), well plate (claim 47) or slide (claim 48).
2. Probes - nucleotidic (claims 30-31), peptidic (claims 30 and 32), or oligomeric/polymeric (claims 30 and 33-34).
3. Conditions – a maximum temperature (claims 5-6 and 7-8), a minimum temperature (claims 5-6 and 9-10) predetermined water content (claims 5-6 and 11) or a chemical (claims 5-6 and 12-18).

From the species **substrate** applicant has elected **well plate** (claim 47); from the species **probes** applicant has elected **peptidic** (claims 30 and 32); and from the species **condition** applicant has elected **chemical** (claims 5-6 and 12-18). Election of species is made without traverse.

APPLICANT'S RESPONSE TO RESTRICTION REQUIREMENT AND ELECTION OF SPECIES

This application was filed on December 28, 2001 with 82 claims. The Restriction Requirement at issue attempts to divide the claims into five groups defining five separate inventions. Applicants submit that the pending claims should *not* be divided into more than *three* separate claim groups. Claims 1-60 should be kept together as devices comprising a substrate and an integrated indicator. Claims 61-64 should be kept together because they recite the attachment of molecular moieties to the substrate of the device of claim 56. Claims 65-82 should be kept together because they set forth the assaying of a sample using the device of claim 1.

The procedures governing restriction practice as set forth in section 803 of the MPEP provide that the criteria for a proper restriction requirement are:

(A) The inventions must be independent (MPEP § 802.01, § 806.04, § 808.01) or distinct as claimed (MPEP (MPEP §802.01, §806.04, §808.01)); and

(B) There must be a serious burden on the Examiner if restriction is required (MPEP § 803.02, §806.04(a) - §806.04(i), §808.01 and §808.02).

Examiner states that inventions II and III; IV and V are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). Examiner asserts that in the instant case the product of group II can be used in ink jet printing methods for preparing a coated substrate, the method of

group III can be performed using a mask, the product of group IV can be used for detecting environmental conditions, and the method of group V can be performed using coated particles.

Attorney for Applicant disagrees with Examiner. All claims of Groups II and III recite the attachment of molecular moieties to the substrate surface of a device comprising a substrate having an integrated indicator. A product (apparatus) or process (method) for attaching molecular moieties to a particular device must involve numerous common features as dictated by the device itself. Given the substantial overlap between the subject matter of the claims of groups II and III, it would not pose a serious burden on Examiner to search and examine these claims together. Accordingly, Applicant respectfully traverses this restriction and requests that the group II and group III claims be searched and examined together.

All of the claims of Groups IV and V recite a product (apparatus) or process (method) for assaying a sample using the molecular probes attached to the substrate surface of the device of claim 1. Thus, these claims also involve common features as dictated by the device of claim 1. Accordingly, Applicants requests that these claims be searched and examined together as well.

APPLICANT'S CONCLUDING REMARKS RE RESTRICTION REQUIREMENTS AND ELECTION OF SPECIES

Applicants elect the claims of Group I and traverse the restriction between the claims of Groups II and III and between the claims of Groups IV and V. Based upon the foregoing arguments, Applicants respectfully request that claims 1-60 remain together in a first group, claims 61-64 remain together in a second group and claims 65-82 remain together in a third group. Should the Examiner grant this request, Applicants elect to pursue device claims 1-60 in this application and reserve the right to file divisional applications during the pendency of this application on the remaining unelected claims. In addition, Applicants have elected the species (1) as indicated on page 13 of this Response, without traverse.

Information Disclosure Statement

The subject application is a CIP of U.S. Patent Application Serial No. 09/751,231. In an effort to advance the prosecution of the subject application, Applicant encloses herewith an IDS setting forth the references cited during the prosecution of Application Serial No 09/751,231.

Claim Rejections – 35 USC § 112

Claims 1-5, 12-30, 32, 35-44,47 and 49-60 have been rejected under 35 USC § 112, second paragraph , as being indefinite for failing to particularly point the subject matter which applicant regards as the invention. Examiner notes that, in the limitation of an "integrated indicator" in claim 1, it is not clear whether the indicator is integrated to the substrate, i.e., the surface of the substrate, to the probes or to something separate from the substrate. With respect to the term "integrated indicator," applicant points out that it is specifically recited in the claims that the probes are attached to a surface of a substrate and that the integrated indicator is a part of the substrate. In some instances, as indicated, as depicted in FIG. 1, and discussed on page 14, line 20, to page 15, line 20, an integrated indicator may be located on the same side of the surface as the probes. Alternatively, as depicted in FIG. 2, and discussed on page 17, lines 1-21, integrated indicators and probes may be provided on a different surface of the same substrate. Applicant believes that the relationship between the probes and the integrated indicator is unambiguously set forth in the application as filed.

Examiner suggests that, with respect to claims 1-5, 12-18, 52-60, it is unclear if Applicant is referring to the same condition, or if there are two separate types of conditions being discussed, namely interactive conditions involving the probes and targets, such as hybridization and binding reactions, and external conditions, such as environmental conditions like temperature and pH. Applicant's intent is that the indicator be responsive to probe-target interactions, but it should be recognized that environmental conditions like temperature and pH affect target-probe interactions. The placement of the indicator in relation to the probes is to assure that it experiences what the probe experiences and that it provides a signal that is a lasting record of what the probe experiences.

There is no intention to separate the indicator from the substrate, but rather to remove the device from the condition. For example:

Ample support for this position is found in the application (All references to page and line numbers are to the originally-filed application). For example, on page 7, lines 17-19 "FIGS. 1A, 1B, and 1C, collectively referred to as FIG. 1, schematically illustrate a device of the present invention comprising ***a substrate in the form of a single disk having molecular probes and an integrated indicator attached to a top surface of the disk***" (emphasis added).

FIGS. 2A, 2B 2C and 2D are discussed on page 7, lines 23-26 as follows: "...the substrate comprises a cartridge containing a magnetic disk and having an ***exterior surface*** formed by a well plate ***having an array of integrated indicators thereon and molecular moieties attached to an interior surface of each well*** of the well plate."

In a discussion of Figures 3A, 3B and 3C on page 8, lines 3-4 see "FIG. 3A shows the ***top view of the slide having probes and integrated indicators attached thereto***...."

In a further discussion of Figure 1on page 19, it is stated at lines4-5 "***Attached to exterior surface 15 is a plurality of different molecular probes 21 in the form of an array***;" and at lines17-18 "***Also shown on surface 15 is an integrated indicator 20 that exhibits a response after exposure to a condition to which the disk 13 may be exposed***."

Also see page 20, lines 21-23, "In another embodiment, the invention pertains to a ***device comprising a substrate having a plurality of molecular probes attached to a surface thereof and a plurality of different integrated indicators.***"

The embodiment of FIG. 3 is also discussed on pages 23: at lines 23-24, "***Attached to exterior surface 15 is a plurality of nucleotidic molecular probes 21 in the form of an array***, and lines 27-30 "***.While only one indicator is required for this embodiment, an array of integrated indicators 20 is shown provided on exterior surface 15 of the slide 13. As shown,***

the indicators 20 are also placed in a rectilinear array, wherein each indicator is located adjacent to a probe."

Examiner argues the term "substantially" in claim 4 renders the claim indefinite, stating that the specification does not provide a standard for ascertaining the requisite degree. Applicant points out to examiner that on page 17, lines 14-18 applicant discusses the preferred duration of the indicator response and sees no need to modify claim 4.

In Claim 14, Applicant intends that the pH of the chemical concentration be from about five to about 9 and has amended claim 14 accordingly.

The device of claims 52-57 is shown in FIG. 3 and described from page 23, line 15 to Page 24, line 6. In the example of FIG. 3 the indicators are intended to provide an accurate measure of whether the hybridization conditions are met. The intent is to match the indicator response to the response of the probe, and Applicant would argue that a person of ordinary skill in the art has the ability to do just that. Accordingly, no amendment of Claims 52-57 is necessary.

Claim rejections – 35 USC § 102

Claims 1-5, 12-30, 32, 35, 40-44, 47, 49-60 are rejected under 35 USC § 102(b) as being anticipated by Nova et al [US 5,874,214].

According to the Examiner, with respect claims 1-4, 24, 25, 30, 32, 35, 40-44, 58, Nova et al. teaches a device that is a combination of matrix materials with programmable date storage or recording devices (column 4, lined 55-64) comprising immobilization of proteins and other biomolecules onto solid or liquid supports (column 23, lines 50-55); photodetectors; radiation, pH, and $PCOC_2$ sensors and memory and recording devices such as EEPROMS. With respect to claims 5, 12-18, Examiner states that Nova et al teaches the use of radiation, pH, and PCO2 sensors, which respond to the detected variables by generating a voltage potential that is conducted a memory device and recorded.

In addition, the Examiner argues that the claim limitations relating to chemical concentrations have no patentable weight and that the sensors disclosed by the prior art would meet the structural limitations of claims 12-18.

The Examiner further argues that, with respect to claims 19-22, 49-57, Nova et al teaches a photo detector to record the occurrence of photo-emitting reactions, that claims 52-56 recite limitations that have no patentable weight, that Nova et al teaches the use of electromagnetic radiation as a data signal for an indicator, that the prior art would read on claims 26-29, that Nova et al teaches the well plate of Claim 47, and that the limitations of claims 59-60 appear to recite steps in which the device claimed is made, which has no patentable weight in a product claim.

It is axiomatic that for a reference to anticipate a claim, a cited reference must disclose each and every element of the claim. *In re Spada,* 15 USPQ2d 1655 (Fed. Cir. 1990). Unless there is "identity of invention," such that all claim elements are disclosed in a single reference, there can be no anticipation under 35 U.S.C. §102. Here all pending independent claims are directed to devices each having at least one integrated indicator that exhibits ***a prolonged detectable response*** when exposed to a condition. That is, ***the indicator continues to exhibit the response for at least one minute after the device is removed from the condition***. This feature is clearly absent from Nova. That is, this feature is neither expressly nor inherently disclosed in Nova. Although Nova describes the use of a temperature sensor, there is no disclosure relating to whether the response of the temperature sensor to a particular temperature is detectable after the temperature sensor is removed from the particular temperature environment. Instead, one of ordinary skill in the art would read Nova as describing a temperature sensor for "real-time" temperature monitoring. Such "real-time" temperature monitoring does not involve an indicator response to a condition that is detectable after the indicator is removed from the condition.

In addition, this feature renders all claims non-obvious over Nova. As pointed out by the Examiner, Nova describes a combination of a matrix with a memory in which a temperature-sensing device may be provide that is electrically connected to the recording device for recording the temperature detected by the sensing device. As further discussed in Nova in column 8, lines

48-52, an electrical signal may be generated as a result which allows the recording device to be written to in less than five seconds, most preferably in about 1 millisecond or less. Thus, Nova merely describes a combination of a matrix with a recording device in which the temperature-sensing device, upon exposure to a particular temperature, responds by instantaneously generating a ***transient*** electrical signal. The transient electrical signal, in turn, may be written to the recording device. While the recording device may serve to provide a record of the particular temperature experience by the temperature-sensing device, ***the response of the temperature of the temperature-sensing device, i.e., transient electrical signal itself, would not be detectable for at least one minute after the temperature-sensing device is removed from the particular temperature***. Thus, Nova does not suggest a device comprised of a substrate having an integrated indicator that exhibits a prolonged and detectable response.

In addition, Nova et al. effectively teaches away from the invention as claimed. As discussed above, Nova et al. describes a combination of a matrix with a recording device, wherein the recording device may record the particular temperature to which the temperature-sensing device has been exposed. With such a record, one skilled in the art would not think that there would be any need for the response of the temperature-sensing device itself to remain detectable. In particular, one skilled in the art, upon reading Nova et al., would not recognize a need for the electrical signal to be generated and detectable for over one minute. Given that Nova et al. teaches a programmable recording device that appears to a be a critical element of the described combination and that a shorter programming time is preferred over a longer programming time, Nova et al. effectively teaches away from an indicator that exhibits a prolonged detectable response. One of ordinary skill in the art would recognize that the prolonged detectable response element does not represent a routine modification of a known device, because Nova teaches away from an indicator that exhibits a prolonged detectable response.

Since the amendments to independent claims 1, 52, 56 and 58 have placed these claims in allowable form, Examiners objections to claims 1-4, 12-30, 32, 35, 40-44, 50; claims 5, 12-18; claims 19-22, 49-57; claims 52-56; claim 23; claims 26-29; claim 47; and claims 59-60 moot and need not be discussed individually except as follows. The references to the teaching of sensors

in the discussion of claims 5, 12-18 have little import if the sensors do not perform as provided in the newly amended Claims of Applicant.

Thus, applicants respectfully request reconsideration and withdrawal of this rejection.

Claim Rejections – 35 USC § 103

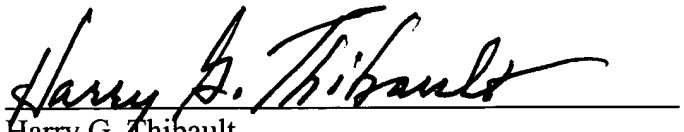
Claims 36-39 are rejected under 35 USC § 103(a) as being unpatentable over Nova et al. [US 5,874,214] and further in view of Rava et al. While the Examiner states that Nova et al. does not disclose an array comprising 10, 50,000, 200,000, or 1,000,000 probes on a substrate, the Examiner states that Rava et al. teaches the use of probe arrays with sizes of .25mm^2 having different amounts of addressable features, e.g. 100, 1000, 100,000 and 1,000,000. Rava also teaches that these arrays allow much higher throughput of test samples microarray containing 10 or more probes. Therefore it would have been obvious in the method of Nova et al to have arrays with different densities of probes in order to improve the efficiency of performing assays on biological chips. As a result, the Examiner states that Nova et al. and Rava et al. are combinable and teach a device for detecting multiple analytes.

Applicants traverse this rejection because the cited patents, when combined, do not teach or suggest all the claim limitations. As discussed above, Nova et al. does not suggest a device comprised of a substrate having an integrated indicator that exhibits a response that is detectable for at least one minute after removal of the indicator from the condition triggering the response. Like Nova et al., Rava et al. also fails to teach or suggest an integrated indicator that exhibits a response that is detectable for at least one minute after removal of the indicator from the condition triggering the response. Accordingly, withdrawal of this rejection is warranted.

For all of the above reasons, it is submitted that this application comports with all requirements of 35 U.S.C. §112, second paragraph and that the pending claims define an invention that is patentable over the art. As the application should now be in condition for allowance, a prompt indication to that effect would be appreciated.

If the Examiner has any questions concerning this communication, he is welcome to contact the undersigned attorney at (650) 330-4917.

Respectfully submitted,

By: 

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